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THE NATIONAL SHIPBUILDING RESEARCH PROGRAM

Metal Products and Machinery Effluent Limitation Guidelines Phase 2: Detailed Analysis of Proposed Regulation

U.S. DEPARTMENT OF THE NAVY
CARDEROCK DIVISION,
NAVAL SURFACE WARFARE CENTER

in cooperation with
National Steel and Shipbuilding Company
San Diego, California

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October 2, 2000

**TO: MICHAEL T. CHEE
NATIONAL SHIPBUILDING RESEARCH PROGRAM**

**FROM: JOHN L. WITTENBORN
JOSEPH J. GREEN**

**RE: STATUS OF THE METAL PRODUCTS & MACHINERY EFFLUENT
LIMITATION GUIDELINES RULEMAKING**

In late July, the U.S. Environmental Protection Agency ("EPA" or "the Agency") submitted proposed effluent limitation guidelines ("ELGs") for the metal products and machinery ("MP&M") industrial sector to the Office of Management and Budget ("OMB") for review¹ prior to submission to the EPA Assistant Administrator for Water for signature and subsequent publication in the *Federal Register*. The proposal is expected to be signed in late October. Publication -- the official date of proposal -- will occur approximately two months after signature.² At that time,

¹Pursuant to Executive Order No. 12,866, OMB's Office of Information and Regulatory Affairs ("OIRA") is charged with reviewing all "significant" proposed rulemakings. "Significant" regulatory actions are those that would have an annual effect on the economy of \$100 million or more, and would include the MP&M ELG proposal. For such "significant" rulemakings, EPA must submit to OIRA an assessment of the costs and benefits of the proposal. Potentially effective and reasonably feasible alternatives to the planned regulation also must be assessed. OIRA has 90 days to review the rule and the Agency's cost-benefit assessment, and may require changes to the proposal.

²The two month timetable for publication, which has been the case in the Agency's past two ELG rulemakings, is a change from EPA's historic practice of publishing approximately three weeks after signature. Thus, publication -- and the start of the comment period -- could occur within three weeks of signature, but we expect that two months is more likely.

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approximately 90 days will be provided for comment, with an extension of between 30 and 60 days possible.

This memorandum summarizes our latest understanding of what the ELG proposal will look like for the shipbuilding industry and provides an update on general issues related to the MP&M ELG rulemaking.

I. SHIPBUILDING UNDER THE MP&M ELG

Currently, with respect to the shipbuilding and repair industry, it is our understanding that the proposal is very similar to the expected proposal we discussed in our August 14, 2000 memorandum. In sum, shipbuilding facilities will be addressed under two parts of the rule: (1) dry docks will be covered by a separate subcategory; and (2) all other shipbuilding (on shore) operations will be under the "general metals" subcategory.

A. Dry Dock Operations

EPA will propose ELGs only for direct dischargers in the dry docks subcategory. EPA has confirmed that dry docks that are indirect dischargers (facilities that discharge their wastewater to a publicly owned treatment works ("POTW")) will not be subject to ELGs, primarily due to the low pollutant removals that an ELG would accomplish and high cost-ineffectiveness of removing the pollutants that are present.

EPA has stated that the ELG will cover wastewaters from direct discharging dry dock facilities that are "generated in or on dry docks and similar structures, such as graving docks, building ways, marine railways and lift barges at shipbuilding facilities (or shipyards)." Covered wastewaters "from within a dry dock or similar structure" include:

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- process wastewater generated inside and outside the vessel, including bilge water; and
- wastewater generated from barnacle removal conducted as preparation for ship maintenance, building or repair.

Wastewaters that are not covered include:

- wastewater from "on-shore" operations at a shipyard (these may be covered under the "general metals" subcategory discussed below;
- wastewater generated on board ships when they are afloat (*i.e.*, not in dry docks or similar structures); and
- flooding water, dry dock ballast water, and non-contaminated storm water (EPA is assuming that these wastewaters are generated before covered MP&M operations occur).

Direct discharger dry dock facilities will be covered by limits based on the application of "best practical control technology currently available" ("BPT"). BPT requirements generally are used to control conventional pollutants -- such as oil and grease ("O&G"), total suspended solids ("TSS"), biochemical oxygen demand ("BOD"), chemical oxygen demand ("COD") and pH -- as opposed to toxic pollutants which are subject to "best available technology economically achievable" ("BAT"). Thus, for dry docks, the proposed ELG will establish limits only for conventional pollutants -- most likely for O&G and TSS. Limits would not be established for metals and other priority toxic pollutants.

Two treatment options are under consideration. The first would be based on application of dissolved air flotation ("DAF") treatment technology, plus the use of certain in-process pollution prevention controls. The second would involve ultrafiltration ("UF") of wastewater streams containing O&G, as well as the use of in-process pollution prevention controls. EPA estimates that

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the UF option would cost less than the DAF option (\$0.57 million versus \$2.15 million in annualized costs), but achieve greater pollutant reductions in terms of O&G and TSS as well as toxic pollutants and metals.

While BAT theoretically is more stringent than BPT,³ in this case, as in most ELGs, BAT will be set equivalent to BPT. The crucial difference, which most likely explains why EPA is opting for a BPT-based approach, is that BAT must meet a more stringent "cost-effectiveness" test, while BPT is based on an easier "cost-reasonableness" standard.⁴

Although BAT-based limits could not be supported, EPA has provided us with data that allegedly shows that the BPT cost-reasonableness test would be satisfied. These data show that, for direct discharging dry docks, conventional pollutants (O&G measured as hexane extractable material ("HEM")) would be removed at a cost of either \$0.07 (for the UF option) or \$0.25 per pound (for the DAF option). BPT cost-reasonableness findings have ranged from \$0.83 to \$30.46 per pound of pollutant removed in past ELGs. The dry dock BPT analysis put forth by EPA is well within this range.

To challenge a BPT-based regulation on the basis of cost, industry must show that the costs imposed by the regulation are "wholly disproportionate" to the benefits. *See Chemical Mfrs. Ass'n v. EPA*, 870 F.2d 177, 205 (5th Cir. 1989). If EPA's data are accurate, then such a challenge would not succeed. Accordingly, we are examining more fully EPA's projection of the costs and pollutant

³ BAT is set on the basis of the single best performing technology in the industry that is deemed to be economically achievable, while BPT reflects the average of the best existing technologies in an industry category.

⁴Our August 14 memorandum details how EPA could not meet the cost-effectiveness test for establishing BAT-based limits for dry docks.

removals (benefits) attributable to the BPT regulation. Experience from past ELGs tells us that EPA's cost and pollutant removal assumptions most likely are exaggerated and subject to substantial revision.

B. Non-Dry Dock Operations

As discussed in the August 14 memorandum, non-dry dock MP&M operations (both direct and indirect dischargers) at shipbuilding facilities will be included in the "general metals" subcategory of the MP&M ELG. This broad category will cover process wastewater discharges from facilities engaged in manufacturing, rebuilding, or maintaining metal parts, products, or machines for use in the MP&M industrial sector.

However, in a change from previous indications, EPA now intends to propose BPT-based -- rather than BAT-based -- limits for operations under this subcategory. Thus, like dry dock operations, shipbuilding facilities can expect the proposed rule to set limits on conventional pollutants (O&G, TSS, and COD most likely) rather than for metals and other non-conventional and priority pollutants. Two treatment options are under consideration: (1) oil/water separation plus chemical precipitation/sedimentation and in-process pollution prevention ("O/W option"); and (2) ultrafiltration plus chemical precipitation and in-process pollution prevention ("UF option").

Limits will be proposed for both direct and indirect dischargers on the basis of either or both of these treatment options. EPA estimates that a total of 3,794 direct discharger facilities will be affected. While 26,194 indirect dischargers may be affected, the Agency is considering several flow rate cutoffs⁵ that would significantly reduce the number of affected facilities:

⁵Facilities with wastewater flows from MP&M activities below these rates would be
(continued...)

- Less than 1 million gallons per year ("MGY"): between 3,055 (for O/W option) and 3,066 (for UF option) facilities will be affected if this cutoff is adopted;
- Less than 2 MGY: between 2,296 and 2,304 affected facilities;
- Less than 3 MGY: between 1,780 and 1,788 affected facilities; and
- Less than 6.25 MGY: 1,121 affected facilities.

The estimated economic impact of the proposed rule, in terms of facility closures, declines significantly with each progressively greater flow rate cutoff level: (1) with no cutoff: 1,056 closures (for the O/W option) or 2,180 closures (for the UF option); (2) 1 MGY or 2 MGY: 64 or 131 closures; (3) 3 MGY: 64 or 120 closures; and (4) 6.25 MGY: 40 or 69 closures.

Because closure rates with no cutoff (4.5 percent or 9.4 percent depending on treatment option) are relatively high, and closure rates at each of the cutoff levels are below one percent, the Agency has indicated that one of the flow rate cutoffs most likely will be adopted. The 1 MGY and 2 MGY options have been discussed as the most likely possibilities. Shipbuilding facilities should determine whether any of the potential flow rate cutoffs would be of benefit.

For direct dischargers, with respect to either treatment option, EPA estimates that the BPT cost-reasonableness test would be satisfied (\$1.22 per pound of COD removed per year for the O/W option, and \$1.84 per pound of COD removed per year for the UF option). For indirect dischargers, EPA calculated the "incremental" cost-effectiveness of choosing the UF option instead of the

⁵(...continued)
excluded from the scope of the ELG.

baseline O/W option.⁶ This analysis shows that, in general, requiring the more expensive UF option is not cost-effective, as the cost of removing slightly more pollutants under the UF option compared to the O/W option is exorbitant. Accordingly, we expect that EPA will propose limits for indirect dischargers based on application of the O/W option.

II. GENERAL MP&M ISSUES

In addition to clarifying issues specific to shipbuilding facilities, we have participated in an *ad hoc* coalition of MP&M industry groups addressing matters of general relevance. As part of this effort, the coalition has worked with Jim Laity of OMB and Kevin Bromberg of the Small Business Administration ("SBA") to press EPA on several issues, including the Agency's calculation of pollutant removals attributable to the proposed rule. Jack Waggener of Dames & Moore, with whom we worked on the analysis of shipbuilding facility data discussed in our August 14 memorandum, has been the industry's point person for this effort.

Significantly, the coalition is attempting to convince EPA to divide the broad "general metals" subcategory into segments that correspond to the various industries currently covered by the subcategory, such as shipbuilding (non-dry-dock operations), aerospace, motor vehicle, electronic equipment, job shops, office machine, and precious metal and jewelry. By grouping facilities from all of these industries under one subcategory, EPA obscures the fact that some industry segments are responsible for very low pollutant loadings. Shipbuilding operations fall in the middle range of

⁶This measures the changes in total annual compliance costs and pollutant removal levels from the baseline, where regulatory options are ranked by increasing levels of toxic-weighted removals. In this case, the O/W option removes slightly fewer pollutants than the UF option. The incremental cost-effectiveness value represents the unit cost of removing the next pound of pollutants.

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pollutant loadings for the facilities covered by this subcategory, contributing approximately 4,700 pounds of pollutant equivalents ("PEs") per facility based on current EPA estimates.

Further, Jack Waggener obtained from EPA documents detailing how the Agency has adjusted toxic weighting factors ("TWFs") for use in the MP&M rule. TWFs represent the relative toxicity of compounds compared to a common reference baseline of toxicity. Use of TWFs enables EPA to calculate the PEs removed by a selected treatment option in assessing the benefits provided by a particular regulation. Thus, when TWFs are adjusted, EPA's estimates of a regulation's benefits also change. In the past, we have found that the TWFs calculated by EPA often are inaccurate and result in overstatement of a proposed rule's benefits. Therefore, in conjunction with the industry coalition, Jack Waggener is reviewing EPA's latest adjusted TWFs to ensure that they are scientifically valid.

EPA also has indicated that it has made adjustments to POTW removal rates, which reflect the amount of a pollutant a properly operated POTW treats effectively. In assessing the need to impose pretreatment standards on indirect dischargers, POTW removal rates are compared to the removal rate achieved by a selected treatment technology. If the POTW removal rate for a pollutant is less than that achieved by the treatment technology, then EPA typically will conclude that regulation of that pollutant is warranted. Thus, the adjustment of POTW removal rates affects the number of pollutants that may be subject to regulation. In addition, the benefits attributed to a particular rule are based on the amount of pollutants removed in excess of those removed by the POTW. Hence, EPA can inflate the estimated benefits of a proposed rule by lowering POTW removal rates.

On behalf of the industry coalition, Jack Waggener currently is attempting to obtain EPA's adjusted POTW removal rate data for use in the MP&M ELG. When the data are received, he will examine them to ensure that EPA's adjustments are technically valid.

To date, the coalition, with the assistance of Jim Laity at OMB and Kevin Bromberg of SBA, has successfully drawn EPA's attention to the issues discussed above and a number of other technical issues that impact the Agency's pollutant removal estimates and, therefore, the projected benefits of the proposed rule. These efforts will continue throughout the public comment period after the rule is proposed.

III. CONCLUSION

With a BPT-based ELG proposal focusing on conventional pollutants expected to be signed in late October and published for public comment in mid- to late December, we intend to focus on evaluating EPA's data from shipbuilding facilities to verify the Agency's claims regarding conventional pollutant loadings from the industry. Jack Waggener will review EPA's technical analyses to ensure their validity. We expect that some errors will be identified, which may be used to support comments to the effect that regulation of dry docks and other MP&M facilities at shipyards is unnecessary. As part of this effort, we will also examine EPA's cost assumptions to identify areas in which the Agency has understated the cost of the proposed rule.

In addition, we will continue to research the legal validity of EPA's reliance on a BPT-based approach to the rule instead of one based on BAT. We believe that EPA's use of BPT is a disguised attempt to address toxic pollutants that would not be successful if pursued under the BAT approach due to a lack of cost-effectiveness. While this appears to be the case, EPA nevertheless may be able

to justify its regulation of conventional pollutants through BPT on its own merits regardless of the incidental benefits achieved by also removing toxic pollutants through the application of BPT technology.

Finally, we continue to believe that the shipbuilding industry should consider developing and presenting to the Agency best management practices ("BMPs") or a voluntary pollution prevention program as an alternative to the issuance of numerical discharge limits. In the case of industrial laundries, EPA withdrew proposed ELGs in favor of a voluntary industry pollution prevention plan. In the recently finalized transportation equipment cleaning ELG, EPA afforded covered facilities the option of implementing a POTW-approved "pollutant management plan" or complying with numerical limits. Based on these precedents, other sectors of the MP&M industry category, including the metal finishers, are developing BMPs as an alternative to numerical limits. This model also may work very well for dry dock operations and other MP&M facilities at shipyards to address conventional pollutant discharges, as well as toxic pollutants.

As part of "Phase 2" of our MP&M ELG project, we will review EPA's proposal when it is released and identify areas for comment. In the meantime, we will continue to pursue the issues discussed above.

* * * *

If you have any questions regarding EPA's expected ELG proposal, please do not hesitate to contact us.

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